1-1-1983

Test 1499: Kubota M7950DT and M7950 Diesel 12-Speed

Tractor Museum
University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

NEBRASKA TRACTOR TEST 1499 — KUBOTA M7950DT DIESEL
ALSO KUBOTA M7950 DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—637 rpm)								
75.44 (56.26)	2400	4.669 (17.674)	0.433 (0.263)	16.16 (3.183)	199 (92.9)	69 (20.7)	75 (23.9)	29.027 (98.019)
Standard Power take-off Speed (540 rpm)—One Hour								
69.32 (51.69)	2035	4.045 (15.312)	0.408 (0.248)	17.14 (3.376)	199 (92.9)	70 (20.9)	75 (23.9)	28.985 (97.878)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
65.94 (49.17)	2468	4.099 (15.516)	0.435 (0.265)	16.09 (3.169)	186 (85.3)	70 (21.1)	75 (23.9)	....
0.00 (0.00)	2548	1.312 (4.966)	....	....	172 (77.5)	70 (21.1)	75 (23.9)	....
33.57 (25.03)	2514	2.555 (9.672)	0.533 (0.324)	13.14 (2.588)	178 (81.1)	70 (21.1)	75 (23.9)	....
75.43 (56.25)	2400	4.712 (17.837)	0.437 (0.266)	16.01 (3.154)	194 (90.0)	70 (20.8)	75 (23.9)	....
16.91 (12.61)	2532	1.938 (7.336)	0.802 (0.488)	8.73 (1.719)	176 (80.0)	70 (20.8)	74 (23.6)	....
50.06 (37.33)	2500	3.216 (12.174)	0.449 (0.273)	15.57 (3.066)	179 (81.7)	70 (20.8)	74 (23.6)	....
Av 40.32	**2493**	**2.972**	**0.516**	**13.57**	**181**	**70**	**75**	**28.950**
Av (30.07)		*(11.250)*	*(0.314)*	*(2.673)*	*(82.6)*	*(21.0)*	*(23.8)*	*(97.760)*

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (C-2) Gear											
63.79 (47.57)	4543 (20.21)	5.27 (8.47)	2400	6.88	4.595 (17.393)	0.504 (0.307)	13.88 (2.735)	187 (85.8)	50 (10.0)	59 (15.0)	28.795 (97.236)
75% of Pull at Maximum Power—Ten Hours 8th (C-2) Gear											
51.37 (38.31)	3469 (15.43)	5.55 (8.94)	2485	5.17	3.717 (14.072)	0.506 (0.308)	13.82 (2.722)	182 (83.3)	40 (4.2)	46 (7.5)	28.879 (97.520)
50% of Pull at Maximum Power—Two Hours 8th (C-2) Gear											
35.04 (26.13)	2314 (10.29)	5.68 (9.14)	2505	3.81	2.937 (11.118)	0.586 (0.357)	11.93 (2.350)	178 (81.1)	43 (6.1)	51 (10.3)	29.015 (97.979)
50% of Pull at Reduced Engine Speed—Two Hours 10th (D-1) Gear											
35.02 (26.11)	2313 (10.29)	5.68 (9.14)	1449	3.67	2.337 (8.845)	0.467 (0.284)	14.99 (2.952)	183 (83.9)	45 (7.2)	55 (12.8)	28.970 (97.827)
MAXIMUM POWER IN SELECTED GEARS											
48.45 (36.13)	7244 (32.22)	2.51 (4.04)	2473	14.78	5th (B-2) Gear			180 (82.2)	40 (4.4)	45 (7.2)	29.030 (98.030)
61.40 (45.79)	6771 (30.12)	3.40 (5.47)	2400	12.75	6th (B-3) Gear			184 (84.4)	40 (4.4)	45 (7.2)	29.030 (98.030)
64.21 (47.88)	6005 (26.71)	4.01 (6.45)	2401	9.73	7th (C-1) Gear			186 (85.6)	47 (8.3)	54 (12.2)	28.840 (97.388)
65.24 (48.65)	4647 (20.67)	5.26 (8.47)	2398	6.82	8th (C-2) Gear			185 (85.0)	46 (7.8)	52 (11.1)	28.850 (97.422)
64.14 (47.83)	3267 (14.53)	7.36 (11.85)	2401	4.72	9th (C-3) Gear			185 (85.0)	48 (8.9)	55 (12.8)	28.830 (97.355)
63.64 (47.45)	2534 (11.27)	9.42 (15.16)	2402	3.57	10th (D-1) Gear			186 (85.6)	49 (9.4)	57 (13.9)	28.820 (97.321)

Department of Agricultural Engineering

Dates of Test: September 27 to October 17, 1983

Manufacturer: KUBOTA LTD, 2-47 Shikitsu higashi, 1-chome, Naniwa-ku, Osaka, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 47.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° *(15°/15°)*** 0.8404 **Fuel weight** 6.997 lbs/gal *(0.839 kg/l)* **Oil SAE** 20-20W **API service classification** SE-SF, CC-CD **To motor** 2.801 gal *(10.601 l)* **Drained from motor** 2.639 gal *(9.991 l)* **Transmission and hydraulic lubricant** Shell Donax TD or equivalent **Front axle lubricant** SAE 80/90 gear oil **Total time engine was operated** 43.5 hours.

ENGINE: Make Kubota Diesel **Type** four cylinder vertical **Serial No.** V4300-A-19536 **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.29″ × 4.53″ *(109 mm × 115 mm)* **Compression ratio** 17 to 1 **Displacement** 262 cu in *(4292 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element **Oil filter** one full flow paper cartridge **Fuel filter** one paper element and water separator **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type front wheel assist **Serial No.** M7950DTF-U50308 **Tread width** rear 59.8″ *(1520 mm)* to 79.5″ *(2020 mm)* front 60.6″ *(1540 mm)* to 68.5″ *(1740 mm)* **Wheel base** 89.0″ *(2260 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 38.0″ *(964 mm)* Vertical distance above roadway 39.5″ *(1003 mm)* Horizontal distance from center of rear wheel tread 0″ *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph *(km/h)*** first 1.1 *(1.7)* second 1.4 *(2.2)* third 1.9 *(3.0)* fourth 2.4 *(3.8)* fifth 3.0 *(4.8)* sixth 4.1 *(6.6)* seventh 4.7 *(7.5)* eighth 6.0 *(9.6)* ninth 8.1 *(13.1)* tenth 10.3 *(16.5)* eleventh 13.1 *(21.1)* twelfth 17.9 *(28.8)* reverse 0.8 *(1.3)*, 1.7 *(2.8)*, 3.4 *(5.4)*, 7.5 *(12.0)* **Clutch** single plate dry disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 145″ *(3.7 m)* left 145″ *(3.7 m)* (on concrete surface without brake) right 185″ *(4.7 m)* left 185″ *(4.7 m)* **Turning space diameter** (on concrete surface with brake applied) right 307″ *(7.8 m)* left 307″ *(7.8 m)* (on concrete surface without brake) right 386″ *(9.8 m)* left 386″ *(9.8 m)* **Power take-off** 540 rpm at 2035 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

LUGGING ABILITY IN 8th (C-2) GEAR

Crankshaft Speed rpm	2398	2165	1913	1681	1442	1194
Pull—lbs *(kN)*	4647 *(20.67)*	4918 *(21.88)*	5215 *(23.20)*	5389 *(23.97)*	5559 *(24.73)*	5546 *(24.67)*
Increase in Pull %	0	6	12	16	20	19
Power—Hp *(kW)*	65.24 *(48.65)*	62.01 *(46.24)*	57.73 *(43.05)*	52.20 *(38.93)*	45.99 *(34.29)*	37.99 *(28.33)*
Speed—Mph *(km/h)*	5.26 *(8.47)*	4.73 *(7.61)*	4.15 *(6.68)*	3.63 *(5.85)*	3.10 *(4.99)*	2.57 *(4.13)*
Slip %	6.82	7.26	8.02	8.39	8.76	8.76

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	97.5	97.5
75% of Pull at Maximum Power—Ten Hours		96.5
50% of Pull at Maximum Power—Two Hours		94.5
50% of Pull at Reduced Engine Speed—Two Hours		90.5
Bystander in 12th (D-3) gear		88.0

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp. °F *(°C)* Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Available Power—Two Hours 8th (C-2) Gear											
63.01 *(46.99)*	4318 *(19.21)*	5.47 *(8.81)*	2401	4.97	4.573 *(17.312)*	0.508 *(0.309)*	13.78 *(2.714)*	189 *(87.2)*	55 *(12.5)*	65 *(18.1)*	28.715 *(96.966)*
MAXIMUM POWER IN SELECTED GEARS											
51.28 *(38.24)*	9641 *(42.88)*	1.99 *(3.21)*	2466	14.89	4th (B-1) Gear			184 *(84.2)*	40 *(4.4)*	44 *(6.7)*	28.860 *(97.456)*
64.72 *(48.26)*	4444 *(19.77)*	5.46 *(8.79)*	2399	5.07	8th (C-2) Gear			186 *(85.3)*	44 *(6.7)*	50 *(10.0)*	28.860 *(97.456)*

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 18.4-30; 6; 16 *(110)*	Two 18.4-30; 6; 16 *(110)*
Ballast	—Liquid (each)	648 lb *(294 kg)*	None
	—Cast Iron (each)	407 lb *(185 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 11.2-24; 6; 26 *(180)*	Two 11.2-24; 6; 26 *(180)*
Ballast	—Liquid (each)	228 lb *(103 kg)*	None
	—Cast Iron (each)	320 lb *(145 kg)*	None
Height of Drawbar		17 in *(430 mm)*	17 in *(430 mm)*
Static Weight with Operator	—Rear	6230 lb *(2826 kg)*	4120 lb *(1869 kg)*
	—Front	4075 lb *(1848 kg)*	2980 lb *(1352 kg)*
	—Total	10305 lb *(4674 kg)*	7100 lb *(3221 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 149°F *(64.9°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1499.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Kubota M7950DT Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irwin T. Omtvedt, Dean and Director